

$$\begin{aligned}
 M_{TOT} &= \Delta_T \times L \times \alpha \times 12 \\
 J_{45} &= 1'' + ((T_{MAX} - 45^\circ) / \Delta_T) \times M_{TOT} \times \sin \theta \\
 J_{60} &= 1'' + ((T_{MAX} - 60^\circ) / \Delta_T) \times M_{TOT} \times \sin \theta \\
 J_{90} &= 1'' + ((T_{MAX} - 90^\circ) / \Delta_T) \times M_{TOT} \times \sin \theta
 \end{aligned}$$

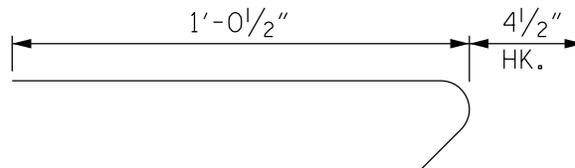
SEE FIGURE 6-43 FOR COEFFICIENT OF THERMAL EXPANSION (α) AND TEMPERATURE VALUES.

BENT 1

$$\begin{aligned}
 \text{TOTAL MOVEMENT} = M_{TOT} &= (100^\circ) (70' + 80') (6.5 \times 10^{-6} / ^\circ\text{F}) (12) \\
 \text{(ALONG } \underline{C} \text{ RDWY)} &= 1.170'' \\
 \text{PERPENDICULAR JOINT} &= 1'' + ((110^\circ - 45^\circ) / (100^\circ)) (1.170'') \sin 65^\circ \\
 \text{OPENING ,J, AT } 45^\circ \text{ F} &= 1.690'' = 1 \frac{11}{16}'' \\
 \text{PERPENDICULAR JOINT} &= 1'' + ((110^\circ - 60^\circ) / (100^\circ)) (1.170'') \sin 65^\circ \\
 \text{OPENING ,J, AT } 60^\circ \text{ F} &= 1.530'' = 1 \frac{1}{2}'' \\
 \text{PERPENDICULAR JOINT} &= 1'' + ((110^\circ - 90^\circ) / (100^\circ)) (1.170'') \sin 65^\circ \\
 \text{OPENING ,J, AT } 90^\circ \text{ F} &= 1.212'' = 1 \frac{3}{16}''
 \end{aligned}$$

BENT 2

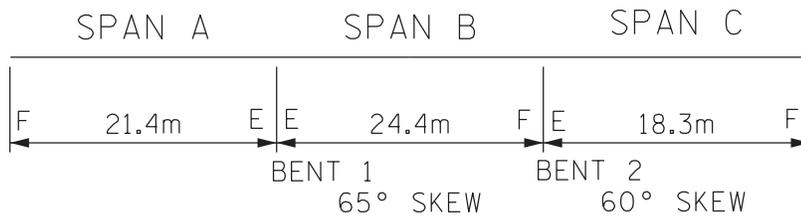
$$\begin{aligned}
 \text{TOTAL MOVEMENT} = M_{TOT} &= (100^\circ) (60') (6.5 \times 10^{-6} / ^\circ\text{F}) (12) \\
 \text{(ALONG } \underline{C} \text{ RDWY)} &= 0.468'' \\
 \text{PERPENDICULAR JOINT} &= 1'' + ((110^\circ - 45^\circ) / (100^\circ)) (.468'') \sin 60^\circ \\
 \text{OPENING ,J, AT } 45^\circ \text{ F} &= 1.263'' = 1 \frac{1}{4}'' \\
 \text{PERPENDICULAR JOINT} &= 1'' + ((110^\circ - 60^\circ) / (100^\circ)) (.468'') \sin 60^\circ \\
 \text{OPENING ,J, AT } 60^\circ \text{ F} &= 1.203'' = 1 \frac{3}{16}'' \\
 \text{PERPENDICULAR JOINT} &= 1'' + ((110^\circ - 90^\circ) / (100^\circ)) (.468'') \sin 60^\circ \\
 \text{OPENING ,J, AT } 90^\circ \text{ F} &= 1.081'' = 1 \frac{1}{16}''
 \end{aligned}$$



DETAIL OF #4 J1 BAR

EXPANSION JOINT SEAL EXAMPLE

STEEL BEAM SHOWN (CONCRETE BEAM SIM.)



$$M_{TOT} = \Delta \times T \times L \times \alpha \times 1000$$

$$J_7 = 25\text{mm} + ((T_{MAX} - 7^\circ) / \Delta_T) \times M_{TOT} \times \sin \theta$$

$$J_{16} = 25\text{mm} + ((T_{MAX} - 16^\circ) / \Delta_T) \times M_{TOT} \times \sin \theta$$

$$J_{32} = 25\text{mm} + ((T_{MAX} - 32^\circ) / \Delta_T) \times M_{TOT} \times \sin \theta$$

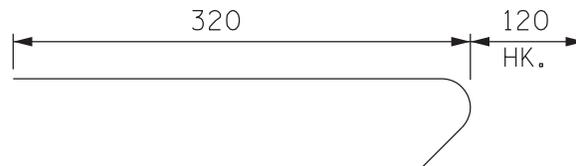
SEE FIGURE 6-43M FOR COEFFICIENT OF THERMAL EXPANSION (α) AND TEMPERATURE VALUES.

BENT 1

TOTAL MOVEMENT = M_{TOT} (ALONG \bar{C} RDWY)	= (55°) (21.4m+24.4m) (11.7×10 ⁻⁶ /°C) (1000)
	= 29mm
PERPENDICULAR JOINT OPENING ,J, AT 7° C	= 25mm+((43°-7°)/(55°)) (29mm) SIN 65°
	= 42mm
PERPENDICULAR JOINT OPENING ,J, AT 16° C	= 25mm+((43°-16°)/(55°))(29mm) SIN 65°
	= 38mm
PERPENDICULAR JOINT OPENING ,J, AT 32° C	= 25mm+((43°-32°)/(55°))(29mm) SIN 65°
	= 30mm

BENT 2

TOTAL MOVEMENT = M_{TOT} (ALONG \bar{C} RDWY)	= (55°) (18.3m) (11.7×10 ⁻⁶ /°C) (1000)
	= 12mm
PERPENDICULAR JOINT OPENING ,J, AT 7° C	= 25mm+((43°-7°)/(55°))(12mm) SIN 60°
	= 32mm
PERPENDICULAR JOINT OPENING ,J, AT 16° C	= 25mm+((43°-16°)/(55°))(12mm) SIN 60°
	= 30mm
PERPENDICULAR JOINT OPENING ,J, AT 32° C	= 25mm+((43°-32°)/(55°))(12mm) SIN 60°
	= 27mm



DETAIL OF #13 J1 BAR

EXPANSION JOINT SEAL EXAMPLE

STEEL BEAM SHOWN (CONCRETE BEAM SIM.)

FIGURE 6 - 52 M